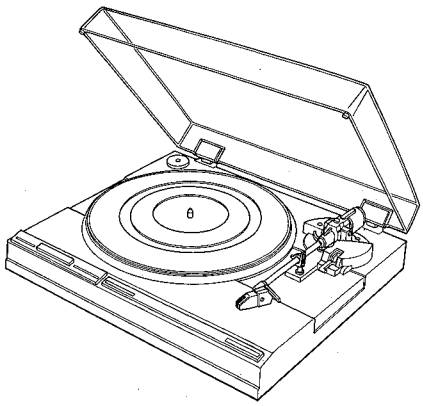
PIONEER

Service Manual

CIRCUIT DESCRIPTIONS
REPAIR & ADJUSTMENTS



ORDER NO.
ARP-459-0

STEREO TURNTABLE

PL-200Z
PL-201Z

MODEL PL-200Z COMES IN TWO VERSIONS DISTINGUISHED AS FOLLOWS:

Type	Voltage	Remarks
ZEM	(DC power supply)	Australia, European continent and West Germany models
Z/G	(DC power supply)	U.S. Military model

MODEL PL-201Z COMES IN ONE VERSION DISTINGUISHED AS FOLLOWS:

Type	Voltage	Remarks
ZUBM	(DC power supply)	U.S.A, Canada, United Kingdom and West Germany models

- This service manual is applicable to the PL-200Z/ZEM type.
- Both model PL-200Z and PL-201Z have the same basic mechanism and performance. The only difference is in appearance.
- For servicing of the PL-200Z/Z/G and PL-201Z/ZUBM types, please see 20 page.
- Ce manuel d'instruction se rerère au mode de réglage en français.
- Cste manual de servicio trata del método de ajuste escrito en español.

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CONTENTS

1. SPECIFICATIONS 2
2. PANEL FACILITIES 3
3. DISASSEMBLY 4
4. ELECTRICAL PARTS LIST 5
5. P.C. BOARDS CONNECTION DIAGRAM 6
6. SCHEMATIC DIAGRAM 7
7. EXPLODED VIEWS 8
8. PACKING 12
9. PRECAUTIONS FOR REASSEMBLY 13
10. ADJUSTMENTS 15
10. RÉGLAGE 17
10. AJUSTE 18
11. FOR PL-200Z/Z/G AND PL-201Z/ZUBM TYPES 20

1. SPECIFICATIONS

Drive System . . . . . Belt-drive
Speeds . . . . . 33-1/3 and 45 rpm
Wow and Flutter . . . . . Less than 0.05% (WRMS)
±0.07% WTD Peak (DIN)
Signal-to-Noise Ratio . . . . . More than 68dB (DIN-B)
(with Pioneer cartridge model PC-250T)
Usable Cartridge . . . . . T4P cartridge

PC-250T Specifications

Type . . . . . Moving magnet type
Stylus . . . . . 0.6 mil diamond (PN-250T)
Output Voltage . . . . . 2.5mV (1kHz, 5cm/s LAT. Peak)
Frequency Response . . . . . 10 to 30,000Hz
Recommended Load 47kΩ

Miscellaneous

Power Requirements DC12V
Dimensions . . . . . 420 (W) x 106 (H) x 375 (D)mm
16-1/2 (W) x 4-3/16 (H) x 14-3/4 (D) in
Weight . . . . . 3.6kg/7 lb 15 oz

Accessories

EP Adapter 1

NOTE:
Specifications and design subject to possible modification without notice, due to improvements.

QUESTIONNAIRE

MODEL _____

One Model per questionnaire

Dear Servicer,

Thank you for your cooperation in the post-sale service of Pioneer products.

This questionnaire is used as a tool to improve the serviceability of our products and service manuals. Please evaluate this model and service manual by answering the following questions. Your ideas may be realized in our future products. Your answers will be appreciated. Thank you.

PIONEER ELECTRONIC CORP.

T. Nakagawa, Manager, Service Section, International Division

1. SERVICING EVALUATION	Circle applicable number:	Good		Fair		Poor
a. Disassembly/Re-assembly:		1	2	3	*4	*5
b. Circuit Checks:		1	2	3	*4	*5
c. Replacement of Parts:		1	2	3	*4	*5
d. Adjustment (s):		1	2	3	*4	*5

* If (4) or (5) was circled, please be specific.

e. Your advice, opinion or ideas related to servicing this product.

2. SERVICE MANUAL EVALUATION

a. Circuit & Mechanism Description

b. Circuit Diagram

3. OTHER

Please describe other areas of servicing which you may find difficult.

Completed by : Date :

Company Name :

Address :

City/State/Zip :

Please send this form filled to the distributor in your country.

QUESTIONNAIRE

Modèle _____

Un modèle par questionnaire

Cher Monsieur,

Merci pour votre coopération à propos du service après-vente des produits PIONEER.

Ce questionnaire a pour but l'amélioration de notre service d'entretien et des manuels de nos produits. Nous vous prions d'évaluer dans ce questionnaire les éléments de nos manuels de service. Vos conseils seront précieux et pris en considération dans la réalisation de nos produits dans l'avenir.
En vous remerciant d'avance, agréez, cher monsieur, l'expression de nos sentiments distingués.

PIONEER ELECTRONIC CORPORATION

T. Nakagawa, Manager, Service Section, Administration Department, International Division

1. ÉVALUATION EN FACILITÉ DE SERVICE MODÈLE	Cerclez le numéro. Bon, Passable, Mauvais,
a. Démontage/remontage	1 2 3 *4 *5
b. Examen de circuits	1 2 3 *4 *5
c. Rechange de pièces	1 2 3 *4 *5
d. Facilité de réglage	1 2 3 *4 *5

* Si vous cerclez No. 4 ou 5, donnez l'explication concrète.

e. Votre conseil ou avis sur le service

2. VOTRE APPRÉCIATION DU MANUEL DE SERVICE

a. Circuit et description du mécanisme.

b. Diagramme du circuit.

3. AUTRES

Anotez les autres points difficiles à réparer.

Répondu par : Date :

Nom : Âge :

Compagnie :

Adresse :

Adressez-vous ce questionnaire au distributeur, S.V.P.

ENCUESTA

Modelo_____

Uno modelo por encuesta

Querido señor,

Muchas gracias por su cooperación en el servicio de post-venta de los productos de Pioneer. Esto es para mejorar el servicio de post-venta de nuestros productos. Les pedimos a ustedes responder a las preguntas siguientes. Su opinión e idea estarán tenido en cuenta en los productos futuros.

Nos complacemos en saludarles muy atentamente,

PIONEER ELECTRONIC CORPORATION

T. Nakagawa, Manager, Service Section, Administration Department, International Division

1. EVALUACION EN LA FACILIDAD DE SERVICIO

MODELO

Marque uno entre los numeros siguientes.

	Bueno		Medio		Malo
a. Desmonte:	1	2	3	*4	*5
b. Examen de circuito:	1	2	3	*4	*5
c. Reemplazo de piezas:	1	2	3	*4	*5
d. Ajuste:	1	2	3	*4	*5

* Si marca (4) o (5), ejemplifiquelo concretamente.

e. Su consejo, opinión u idea en el servicio de este modelo.

2. EVALUACION DEL MANUAL DE SERVICIO

a. Circuito & Descripción de mecanismos.

b. Diagrama del circuito.

3. OTRAS

Describe otras partes dificiles de reparar.

Respondido por : Fecha :

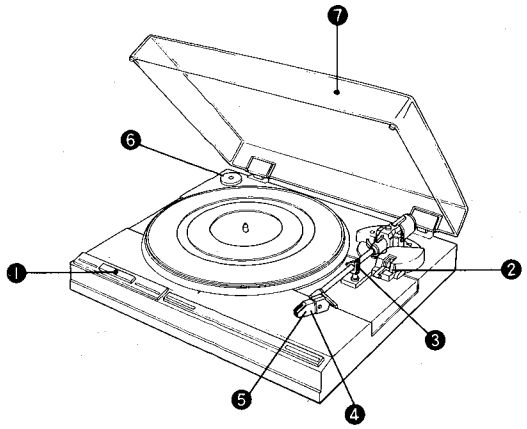
Nombre : Edad :

Compañía :

Dirección :

Manda esta enquesta al domicilio del distribuidor, por favor.

2. PANEL FACILITIES



1 SPEED SWITCH

Set this switch in accordance with the speed of the record which is to be played.
[33] : For 33-1/3 rpm records.
[45] : For 45 rpm records.

2 ARM ELEVATION LEVER

3 ARM REST AND CLAMPER

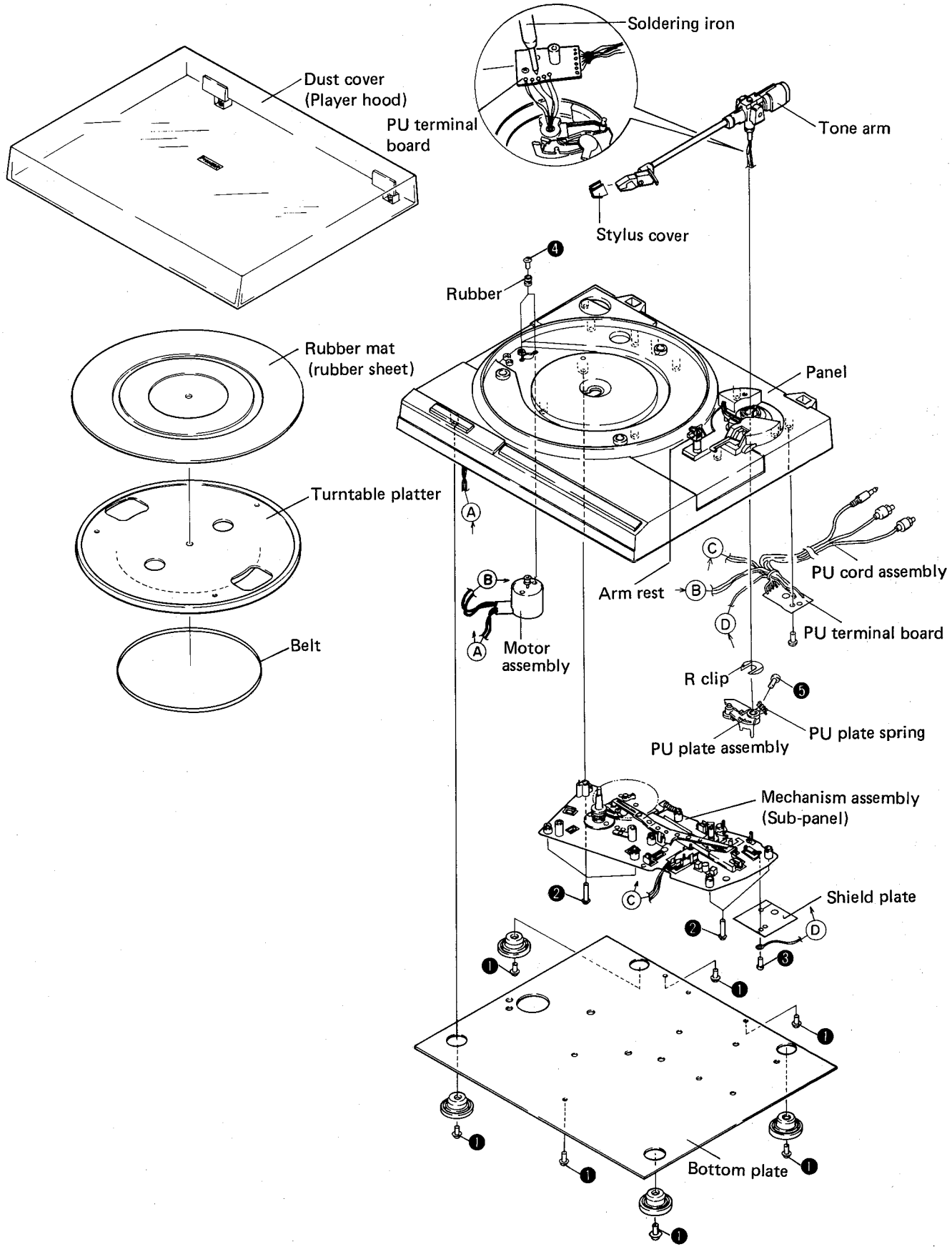
4 CARTRIDGE

5 STYLUS

6 EP ADAPTER

7 DUST COVER

3. DISASSEMBLY



• Mechanism Ass'y and Motor

1. Turn on the turntable and free the mechanism.
2. Fasten the tone arm to the arm rest.
3. Remove the rubber sheet and turntable platter.
4. Close the player hood and turn the player upside down and place it on a soft cloth so that the player hood is not damaged.
5. Remove the seven screws ❶ , and remove the bottom plate.
6. Remove five screws ❷ and one screw ❸.
7. Disconnect the lead wires Ⓓ
   The mechanism ass'y can be removed from the panel.
8. Using a soldering iron, disconnect the lead wires Ⓑ from the motor.
   Remove the two screws ❹, and remove the motor.

• Tone Arm

1. Remove the mechanism ass'y from the panel.
2. Using a soldering iron, disconnect the PU lead wires (arm lead wires) from the PU terminal board.
3. Remove the one screw ❺ , and remove the PU plate ass'y from the tone arm.
4. Remove the R clip.
5. Turn the player onto its side, remove the arm reset clamp, and remove the tone arm from the panel.

See pages 13 ~ 15 for the parts installation and assembly precautions.

4. ELECTRICAL PARTS LIST

NOTES:

- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*
  Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560Ω	*56 × 10¹*	*561 .....*	*RD¼PS* 5 6 1 *J*
47kΩ	*47 × 10³*	*473 .....*	*RD¼PS* 4 7 3 *J*
0.5Ω	*0R5*	.....	*RN2H* 0 R 5 *K*
1Ω	*010*	.....	*RS1P* 0 1 0 *K*

  Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

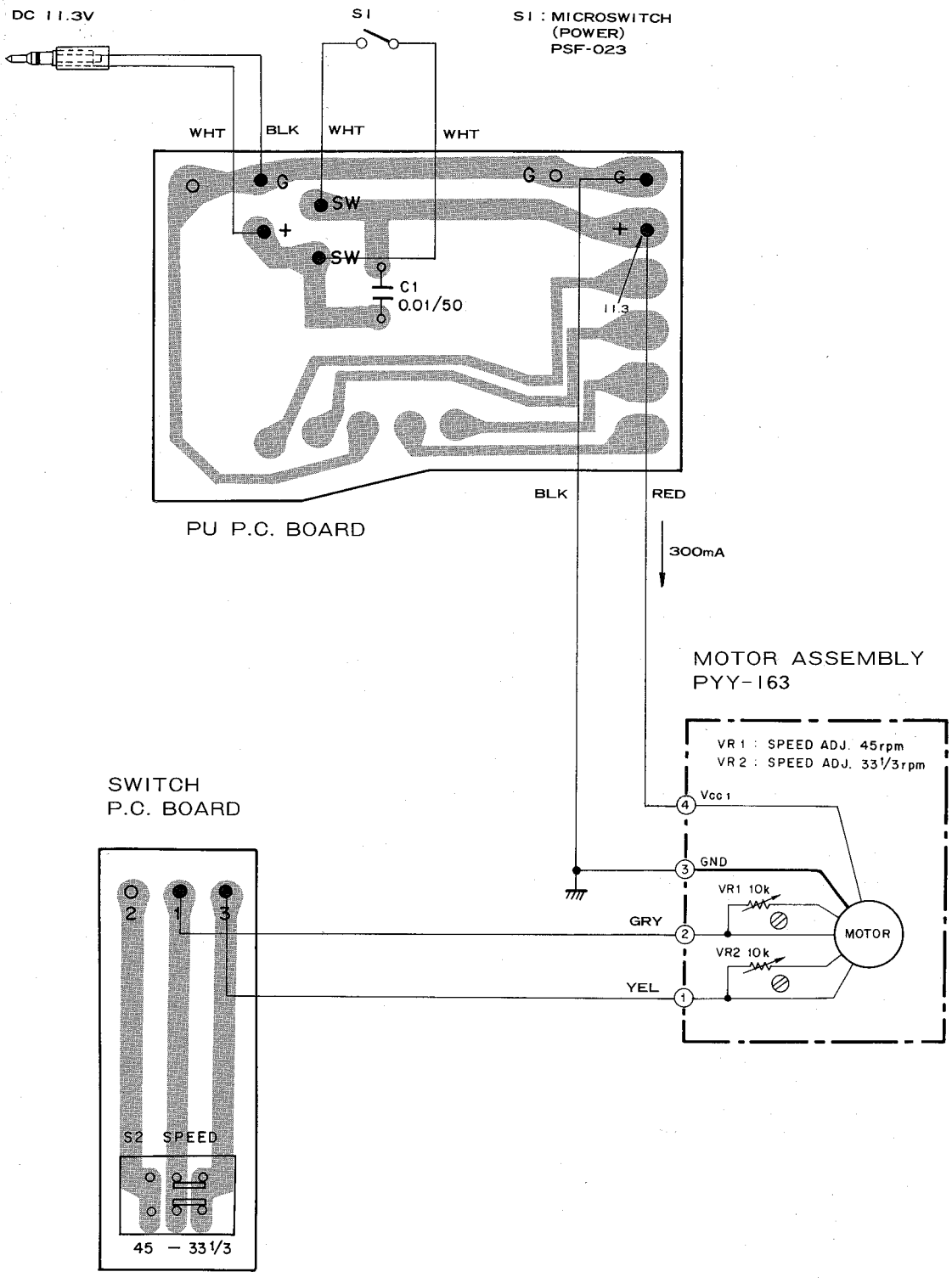
5.62kΩ	*562 × 10¹*	*5621 ....*	*RN¼SR* 5 6 2 1 *F*

- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★ .*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

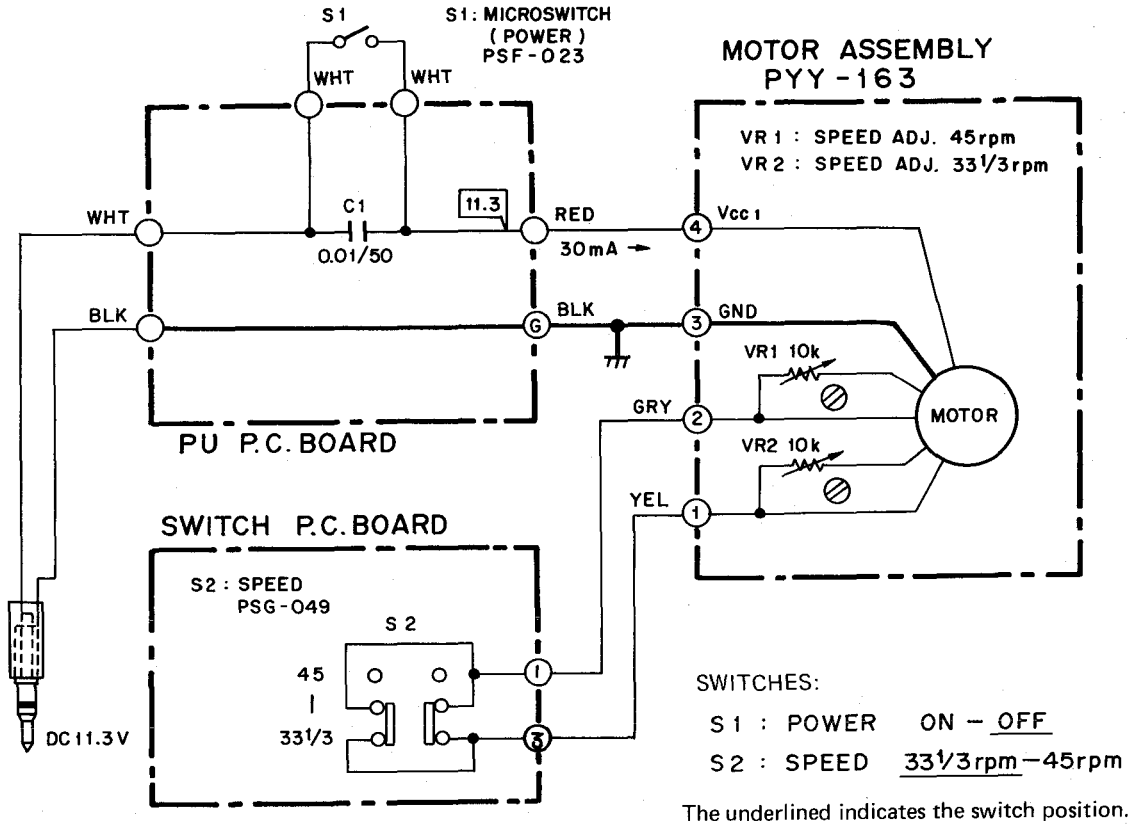
Miscellaneous Parts

Mark	Symbol & Description		Part No.
★	Motor assembly		PYY-163
	Cartridge (without stylus)		PXV-952
	PU cord assembly		PXB-382
	S2	Capacitor	CKDYF 103Z 50
★★	C1	Push switch (SPEED)	PSG-049
⚠ ★★	S1	Microswitch (POWER)	PSF-023

5. P. C. BOARDS CONNECTION DIAGRAM



6. SCHEMATIC DIAGRAM



1. RESISTORS:
Indicated in Ω, ¼W, ±5% tolerance unless otherwise noted k : kΩ, M : MΩ, (F) : ±1%, (G) : ±2%, (K) : ±10%, (M) : ±20% tolerance

2 CAPACITORS:
Indicated in capacity (μF)/voltage (V) unless otherwise noted p : pF
Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE
: DC voltage (V) at no input signal

4. OTHERS:
➡ : Signal route.
⊘ : Adjusting point.
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
※ marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

7. EXPLODED VIEWS

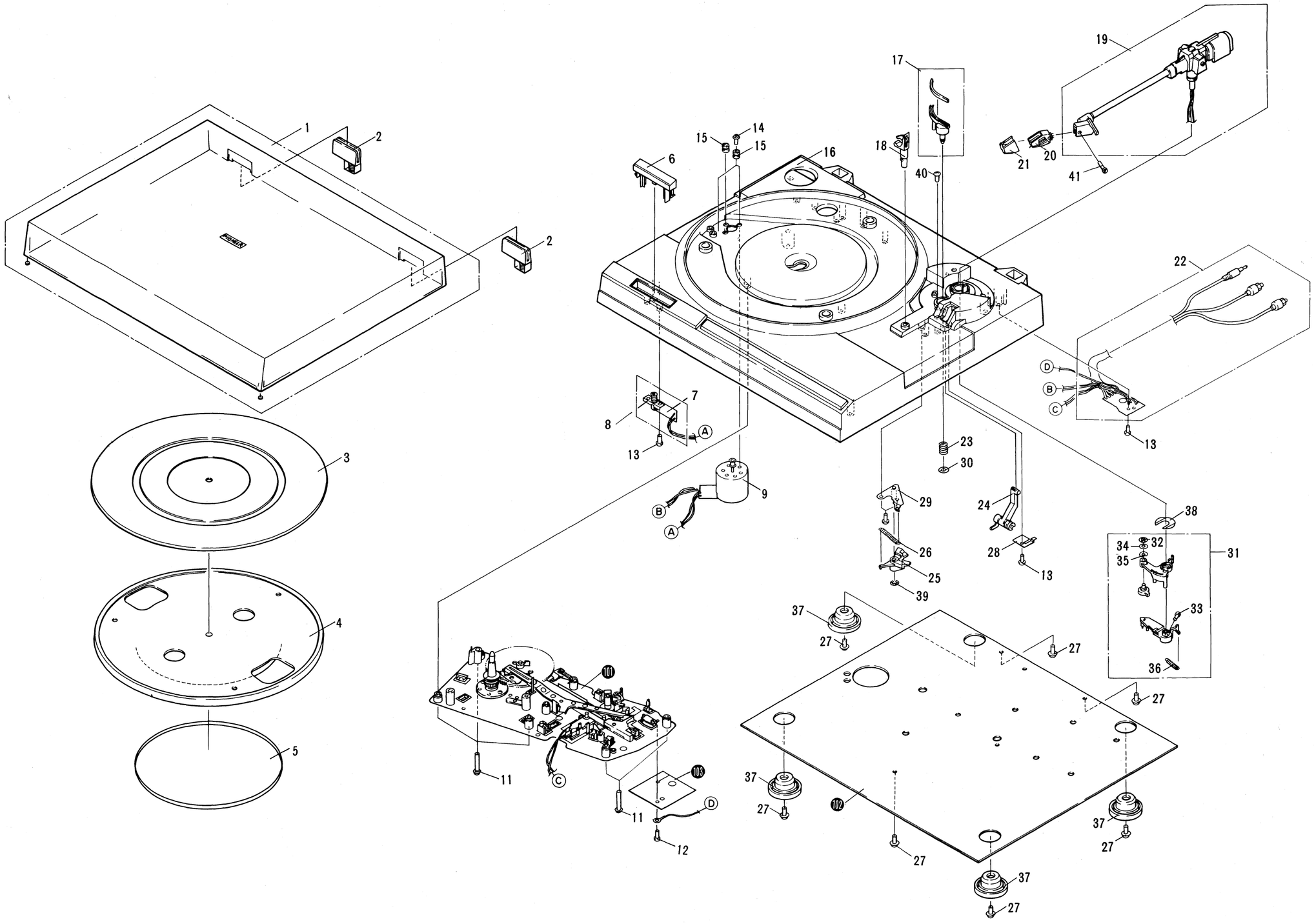
7.1 EXTERIOR

Parts List

NOTES:

- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★ .*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
	1.	PNV-034	Dust cover		26.	PBH-238	Elevation cam spring
	2.	PXB-378	Hinge assembly		27.	IPZ30P100FMC	Screw 3x10
	3.	PEA-061	Rubber mat assembly		28.	PBK-053	EV plate spring (A)
	4.	PNR-192	Turntable platter		29.	PXT-462	EV plate spring (B) unit
★	5.	PEB-224	Belt		30.	PBF-020	Washer
	6.	PAD-147	SP button unit		31.	PXB-375	PU plate (B) assembly
	7.	PNP-306	Switch P.C. board		32.	YS40FBT	Washer
★★	8.	PSG-049	Push switch (S2)		33.	PMD40P080FMC	Screw 4x8
★	9.	PYY-163	Motor assembly		34.	WC40FMC	Washer
	10.		.....		35.	PNC-227	PU spring washer
	11.	IPZ30P290FMC	Screw 3x29		36.	PBH-308	PU plate spring
	12.	PDZ30P060FMC	Screw 3x6		37.	PEB-251	Insulator
	13.	PPZ30P080FMC	Screw 3x8		38.	PBK-059	R clip
	14.	PBA-112	Screw		39.	YE30S	Retaining ring (Type E)
	15.	PEB-172	Motor rubber		40.	BPZ26P120FZK	Screw 2.6x12
	16.	PNY-197	Panel		41.	PBA-170	Screw
	17.	PXB-374	EV sheet assembly				
	18.	PXB-373	Arm rest assembly	⚠	101.		Sub-panel assembly
	19.	PPD-658	Tonearm assembly		102.		Button plate
	20.	PXV-952	Cartridge (without stylus)		103.		Shield plate
	21.	PNX-972	Stylus cover				
	22.	PXB-382	PU cord assembly				
	23.	PBH-293	EV spring				
	24.	PNX-344	EV cam lever				
	25.	PNX-339	Elevation cam				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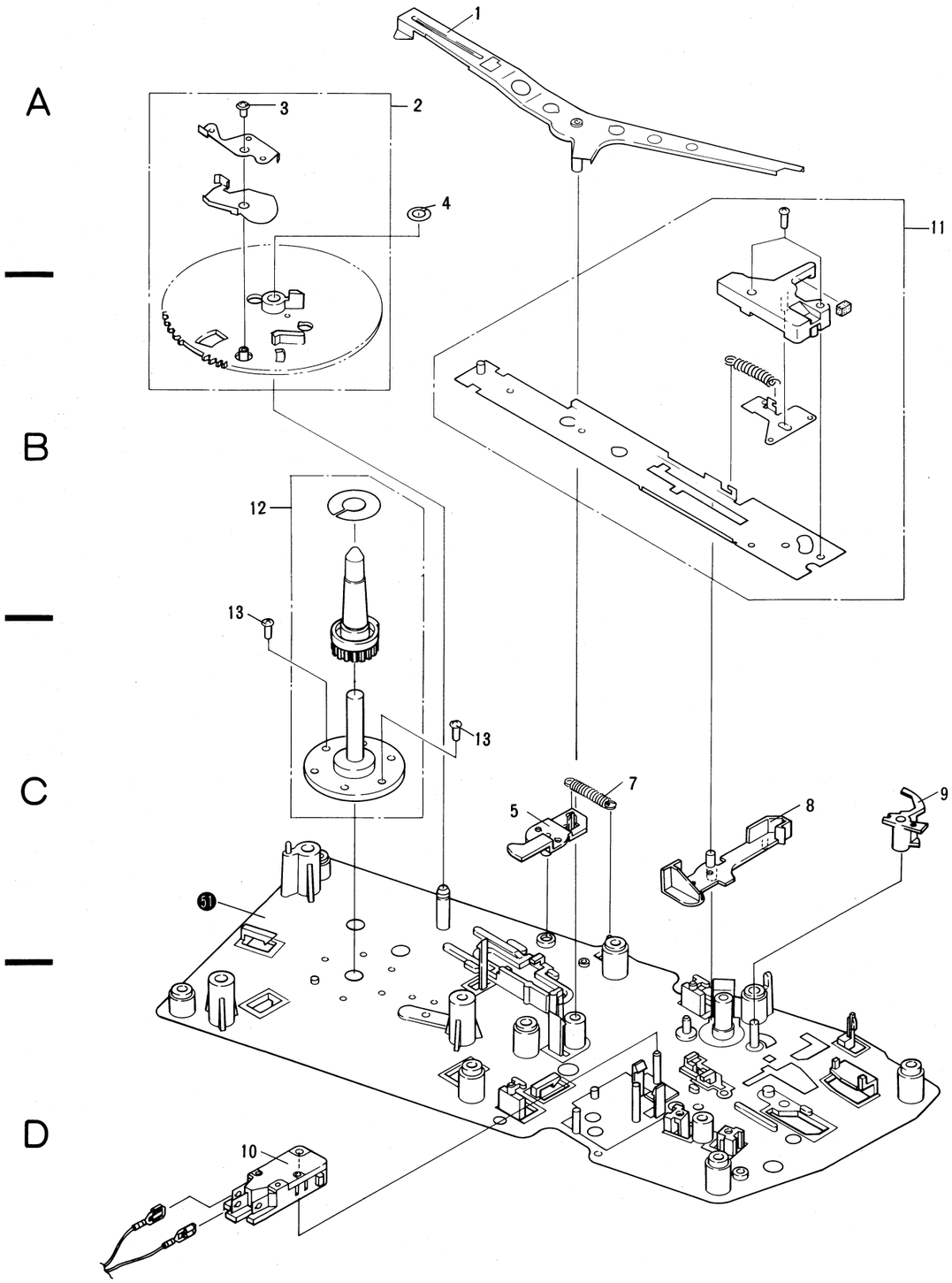
7.2 SUB-PANEL ASSEMBLY



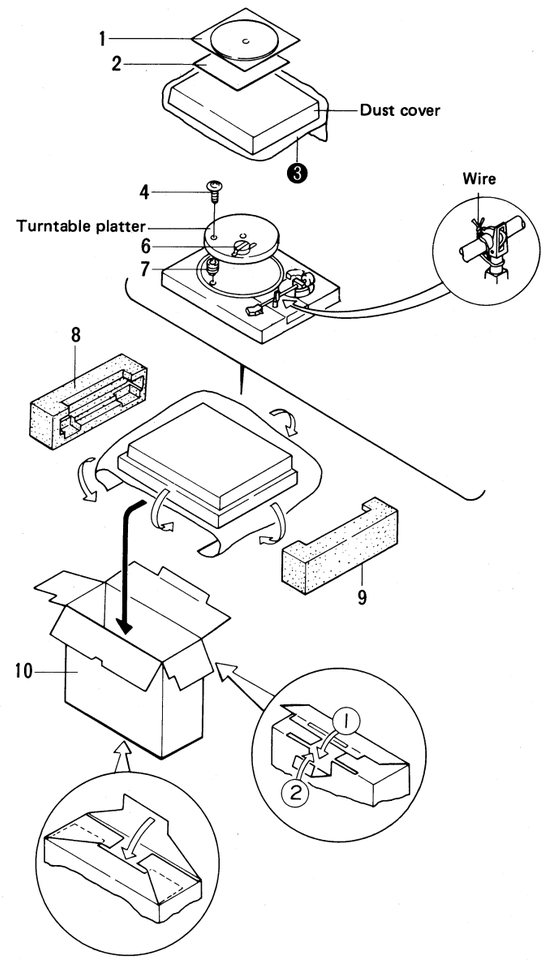
Parts List

Mark	No.	Part No.	Description
	1.	PXT-446	Detector lever unit
	2.	PYY-164	Cam assembly
	3.	PBA-126	Screw 2.6x8
	4.	PBF-018	Washer
	5.	PNY-139	Lock plate
	6.		.....
	7.	PBH-225	Lock plate spring
	8.	PNX-030	Switch lever
	9.	PNY-141	Switch locker
⚠ ★★	10.	PSF-023	Microswitch (S1)
	11.	PXB-232	Driving plate assembly
	12.	PXB-379	Shaft assembly
	13.	PDZ30P080FMC	Screw 3x8
	51.		Subpanel unit

8. PACKING

Parts List

Mark	No.	Part No.	Description
	1.	PEA-061	Rubber mat assembly
	2.	PRH-003	Information note
	3.		Sheet
	4.	PBA-144	Clamp screw
	5.		.....
	6.	N93-603	45 adaptor
	7.	PNX-294	Platter cushion
	8.	PHA-175	Protector (L)
	9.	PHA-176	Protector (R)
	10	PHH-120	Packing case



9. PRECAUTIONS FOR REASSEMBLY

Follow these directions and precautions when reassembling a unit after completing repairs. Be sure to lubricate as required, make no mistakes when attaching parts, and avoid all other careless mistakes that may be the cause of trouble later on.

9. 1 AREAS THAT REQUIRE LUBRICATION

NOTE:
Types of lubricants and areas where they are used are listed in table 1.

Table 1

Type of Oil	Areas used
Silicon Oil #50000	raising shaft
GYA-008	all other areas

Lubrication points are specified for greases other than GYA-008. Never use a different type of greases.

- **Cam Section**

Apply grease to the heart-shaped grooved section (rear side of the cam) and lock plate sliding section in order to minimize wear on the sliding section and the burden on the mechanism.

- **Driving Plate Assembly**

Decrease the burden on the mechanism and the wear on the sliding section.

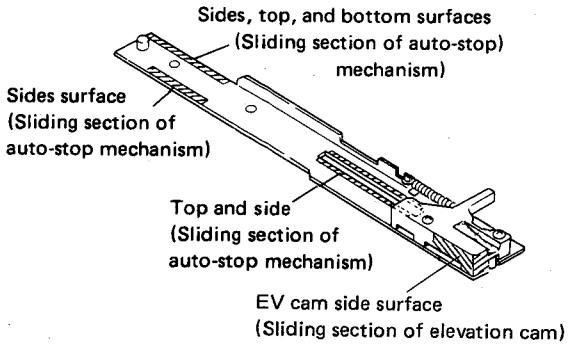


Fig. 9-1 Driving panel assembly section Switch Locker Section

- **Switch Locker Section**

Apply grease to the switch locker (opening) and sub-panel base sliding section to decrease the burden on the mechanism.

When applying grease to the opening (shaft hole), do not apply any grease 2—3mm from the bottom surface. If grease is applied 2—3mm within the bottom surface, it may come out the bottom and go between the switch lever and sub-panel base causing the switch lever to operate ineffectively.

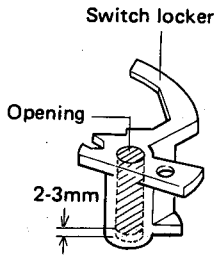


Fig. 9-2 Switch locker section

- **EV Sheet Section**

Apply oil to the raising shaft and sliding section of the bearing to assure stability in the elevation lowering speed.

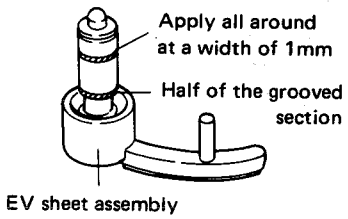


Fig. 9-3 EV sheet section

- **EV Cam Lever Section**

Apply grease to the sliding section of EV plate spring (A) and EV lever unit to decrease the burden on the mechanism.

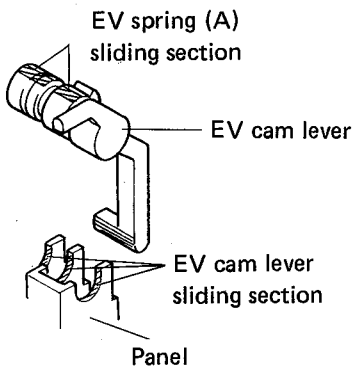


Fig. 9-4 EV cam lever section

- **Elevation Cam Section**

Apply grease to the elevation cam and sliding section of the raising shaft to decrease the burden when operated.

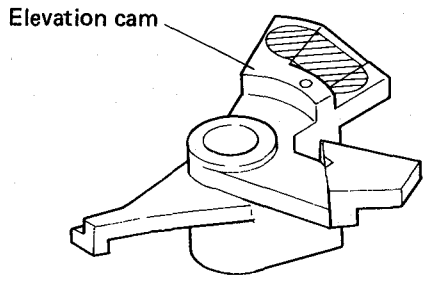


Fig. 9-5 Elevation cam section

9.2 PRECAUTIONS FOR ATTACHMENT OF PARTS AND REASSEMBLY

- **Cam Assembly Attachment**

The cam assembly is attached by letting the lock plate go in the direction Ⓐ as shown in Fig. 9-6.

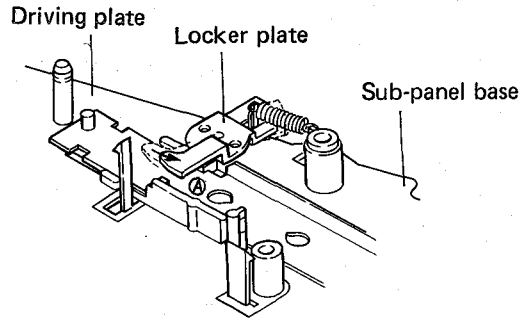


Fig. 9-6 Cam assembly attachment

- **Arm Base Attachment**

When attaching the arm base section to the mechanism section, put the mechanism section switch locker and switch lever in the locked position and verify that the tonearm is in the arm rest location. Also check that the PU plate shaft is in the position shown in Fig. 9-7.

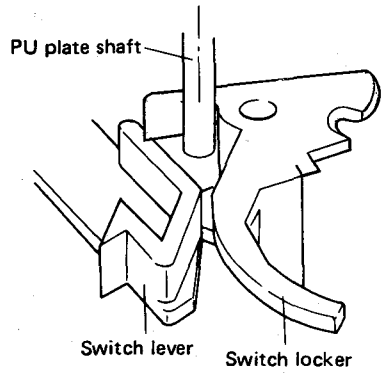


Fig. 9-7 Arm base attachment

- **PU Plate Assembly Attachment**

The PU plate assembly is attached by pushing the PU plate bearing section against the arm rotating shaft fixing nut.

The attachment direction is matched to the center of the support line as shown in Fig. 9-8 (tone arm position on the arm rest).

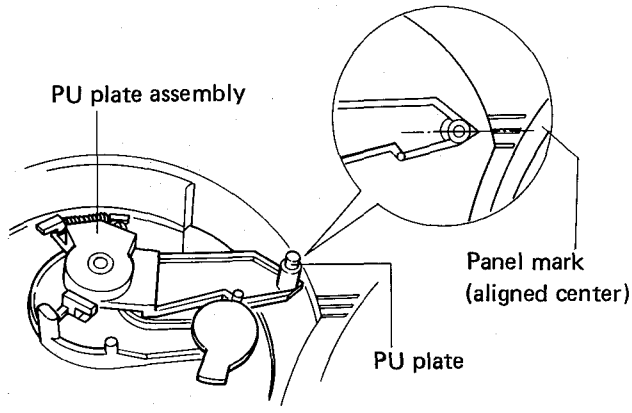


Fig. 9-8 PU plate attachment

- **PU lead Wire Position Confirmation**

When attaching the mechanism ass'y to the panel, be careful that the PU lead wire is not pinched at the panel boss as shown in Fig. 9-9.

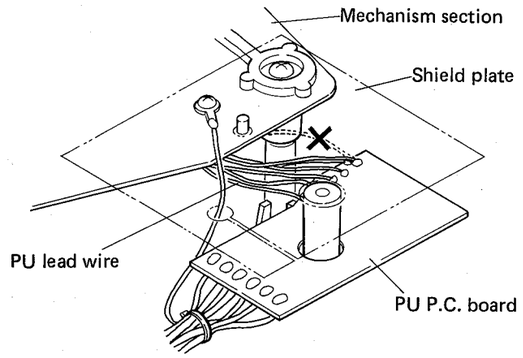


Fig. 9-9 PU lead wire attachment

- **Installing The Cords**

When installing the PU lead wire and DC power cord, install them to the panel with string as shown in Fig. 9-10.

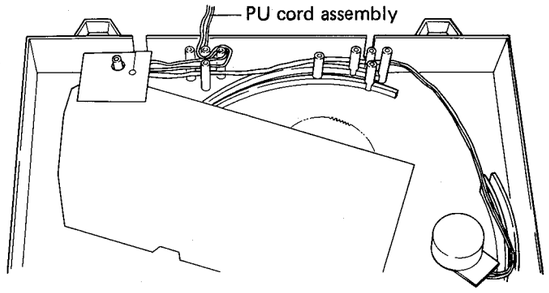


Fig. 9-10 Cords stringing

10. ADJUSTMENTS

10. 1 AUTO-RETURN ADJUSTMENT

- **Auto-Return Position Adjustment**

When auto-return occurs too early or too late, make the following adjustments.

1. Check the stylus landing position. If the stylus does not land at the correct position, adjust the landing position.
2. Set the arm elevation switch to UP and turn the auto-return adjustment screw fully counter-clockwise.
3. Move the tone arm as far as it will go toward the inside.
4. When the auto-return adjustment screws is turned slowly clockwise, the tone arm will begin to move toward the inside.
5. Stop turning the adjustment screw at the point at which there is a space of 32 mm between the cartridge stylus and the center shaft. (Fig. 10-1)
6. After adjustment, check that auto-return is performed correctly and that the stylus landing position is correct.

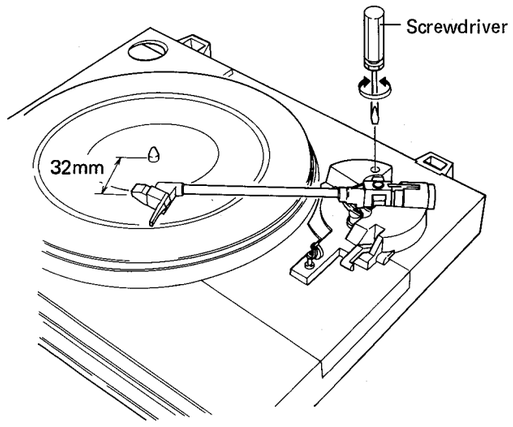


Fig. 10-1 Auto-return adjustment

10. 2 ARM-ELEVATION ADJUSTMENT

- **Arm Elevation Height Adjustment**

1. Turn the arm elevation lever up to raise the tone arm.
2. Adjust the screw so that stylus is 23 mm above the panel. When the adjustment screw is turned counterclockwise, the stylus lowers.

10. 3 MOTOR ADJUSTMENTS

Place the record player on blocks as shown in Fig. 10.3 and adjust the motor from the under base.

1. Turn the arm elevation lever up to raise the arm.
2. Place a strobo sheet on the turntable, move the arm to the turntable side, and rotate the turntable.
3. Adjust semifixed resistors VR1 and VR2 of the motor ass'y so the strobo of the strobo sheet appears to the static.
4. First adjust VR2 for 33 1/3 rpm and then adjust VR1 for 45 rpm.

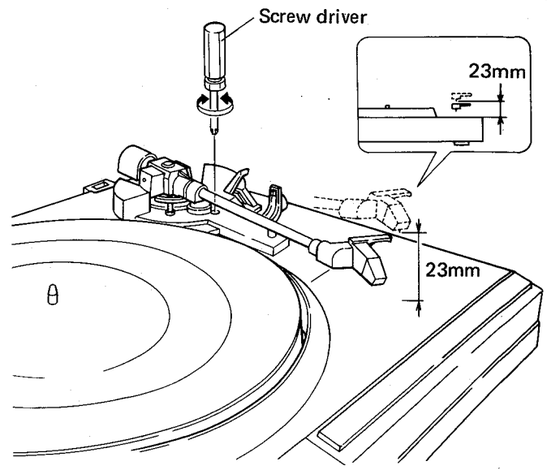


Fig. 10-2 Arm-elevation adjustment

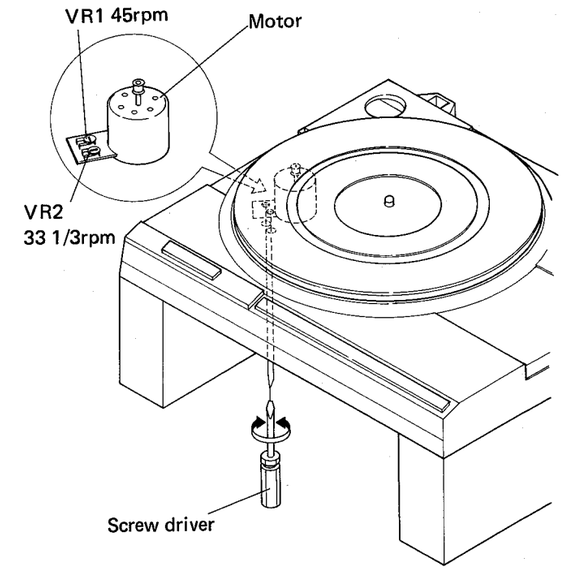


Fig. 10-3 Motor adjustment

10. RÉGLAGE

10.1 RÉGLAGE DE RETOUR AUTOMATIQUE

- **Réglage de la position de retour automatique**

Réaliser les réglages suivants lorsque le retour automatique se produit tôt ou trop tard.

1. Contrôler la position de descente de la pointe de lecture. Si la pointe de lecture ne descend pas sur la position correcte, ajuster la position de descente.
2. Régler la touche de relevage du bras sur la position "UP" et tourner la vis de réglage du retour automatique à fond dans le sens contraire des aiguilles d'une montre.
3. Déplacer le bras de lecture le plus possible vers l'intérieur.
4. Lorsque la vis de réglage du retour automatique est tournée lentement dans le sens des aiguilles d'une montre, le bras de lecture commence à se déplacer vers l'intérieur.
5. Arrêter de tourner la vis de réglage sur le point pour lequel il y a un écart de 32mm entre la pointe de lecture et l'axe central. (Fig. 10-1)
6. Après le réglage, vérifier que le retour automatique se réalise correctement et que la position de descente de la pointe est correcte.

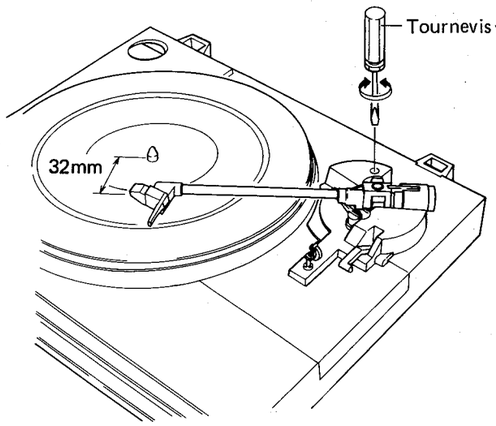


Fig. 10-1 Réglage de retour automatique

10.2 RÉGLAGE DE RELEVAGE DU BRAS LECTURE

- **Réglage de la hauteur de relevage du bras de lecture**

1. Tourner le levier de relevage du bras pour soulever le bras de lecture.
2. Régler la vis de sorte que la pointe de lecture se situe à 23 mm au-dessus du panneau. Lorsqu' on tourne la vis de réglage dans le sens contraire des aiguilles d'une montre, la pointe de lecture se baissera.

10.3 RÉGLAGE DU MOTEUR

Placer le tourne-disques sur des blocs, comme il est montré dans la Fig. 10-3 et régler le moteur depuis le dessous.

1. Tourner le levier de relevage du bras pour soulever le bras de lecture.
2. Placer une feuille stroboscopiques sur le tourne-disques; déplacer le bras jusqu'au côté du tourne-disques et le faire tourner.
3. Régler les résistances demi-fixes VR1 et VR2 de l'ensemble du moteur, jusqu'à ce que la feuille stoboscopique apparaît immobile.
4. D'abord régler VR2 pour avoir la vitesse de 33 1/3 tr/min, ensuite, régler VR1 pour 45 tr/min.

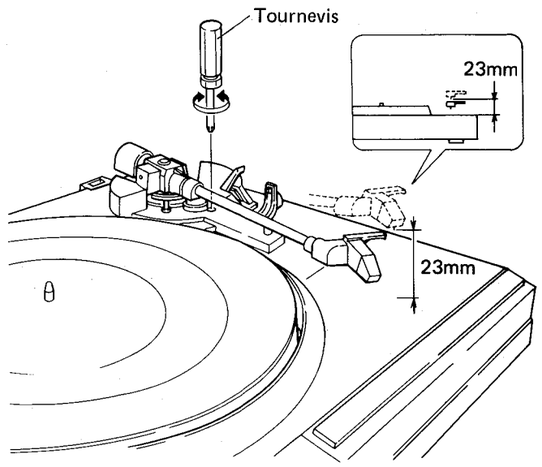


Fig. 10-2 Réglage de relevage du bras de lecture

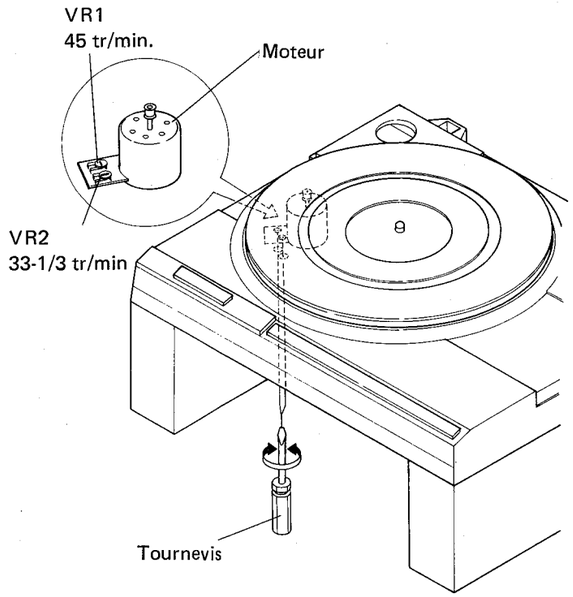


Fig. 10-3 Réglage du moteru

10. AJUSTE

10.1 AJUSTE DE RETORNO AUTOMÁTICO

- **Ajuste de la posición de retorno automático**

Cuando el retorno automático se produce demasiado rápido o demasiado tarde, efectuar los ajustes siguientes.

1. Comprobar la posición de descenso de la aguja. Si la aguja no desciende en la posición correcta, ajustar la posición de descenso.
2. Ajustar el interruptor de elevación del brazo en la posición UP y girar el tornillo de ajuste de retorno automático completamente hacia la izquierda.
3. Desplazar el brazo fonocaptor hacia el interior al máximo.
4. Cuando se giran lentamente los tornillos de ajuste de retorno automático hacia la derecha, el brazo fonocaptor emplezará a moverse hacia el interior.
5. Dejar de girar el tornillo de ajuste en el punto en el que haya un espacio de 32mm entre la aguja de la cápsula y el eje central. (Fig. 10-1)
6. Después del ajuste, compronar que la operación de retorno automático se efectúe correctamente y que la posición de descenso de la aguja sea la correcta.

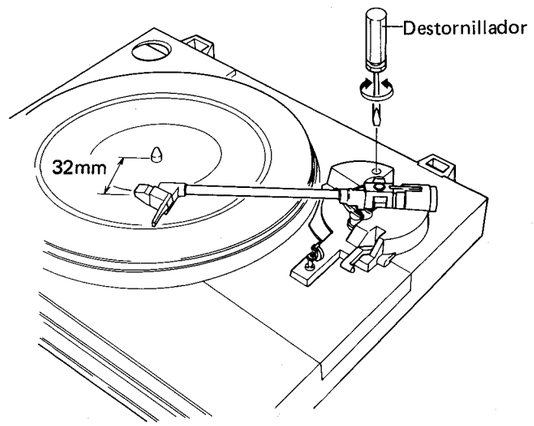


Fig. 10-1 Ajuste de retorno automático

10.2 AJUSTE DE LA ELEVACIÓN DEL BRAZO

- **Ajuste de la altura de la elevación del brazo**

1. Girar la palanca de elevación del brazo para elevar el brazo fonocaptor.
2. Ajustar el tornillo de modo que la aguja quede 23 mm por encima del panel. Al girar el tonillo de ajuste en el sentido contrario de las manecillas del reloj, se abaja la aguja.

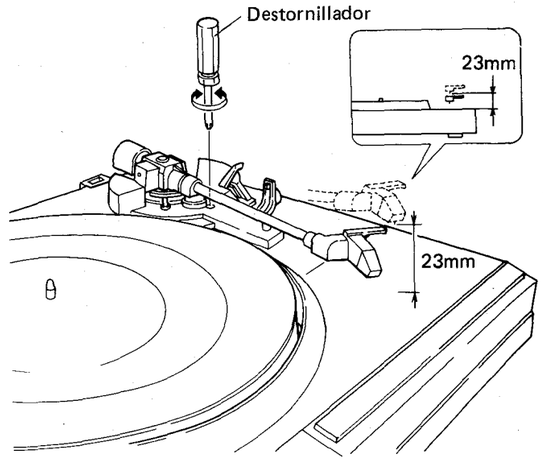


Fig. 10-2 Ajuste de la elevación del brazo

10.3 AJUSTES DEL MOTOR

Poner el giradiscos sobre bloques como se muestra en la Fig. 10-3 y ajustar el motor desde abajo.

1. Girar la palanca de elevación del brazo para elevar el brazo fonocaptor.
2. Poner una lámina estroboscópica sobre el plato, mover el brazo hacia el plato y hacer girar el plato.
3. Ajustar los resistores semifijos VR1 y VR2 del conjunto del motor de mode que el estrobo y la lámina estroboscópica parezcan parados.
4. Primero ajustar VR2 a 33 1/3 rpm luego VR1 a 45 rpm.

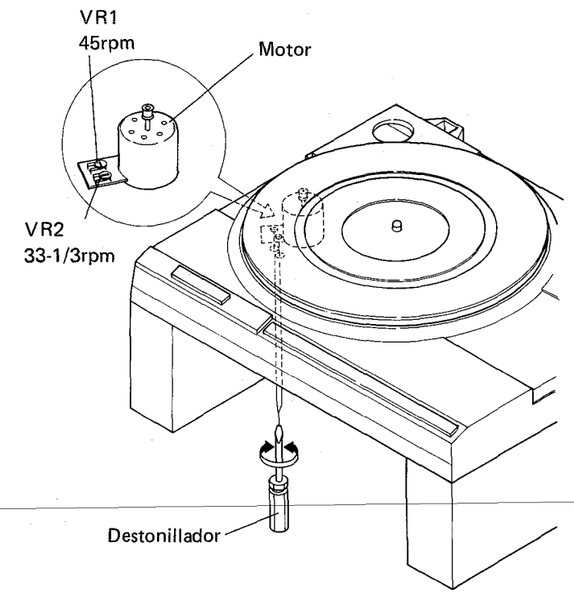


Fig. 10-3 Ajuste del motor

11. FOR PL-200Z/Z/G AND PL-201Z/ZUBM TYPES

PL-200Z/Z/G and PL-201Z/ZUBM types are the same as the PL-200Z/ZEM type except for following sections.

Contrast Parts

Mark	Symbol & Description	Part No.			
		PL-200Z/ZEM type	PL-200Z/Z/G type	PL-201Z/ZUBM type	Remarks
	Panel	PNY-197	PNY-197	PNY-150	
	SP button unit	PAD-147	PAD-147	PAD-148	
	Dust cover	PNV-034	PNV-040	PNV-034	
	Arm rest assembly	PXB-373	PXB-373	PXB-396	
	Packing case	PHH-120	PHH-120	PHH-121	
	Spacer	....	PHC-098	....	